

## REMARKS

In the Office Action mailed April 25, 2007, the Office (1) objected to the drawings; (2) rejected claims 1-4, 7, 16, 18, 20, 32-34 and 38 under 35 U.S.C. § 102(a) as being anticipated by Arnon et al., U.S. Patent Publication No. 2002/0114038 (hereinafter "Arnon"); (3) rejected claims 5, 8-12, 19, 35, 39 and 40 under 35 U.S.C. § 103(a) as being unpatentable over Arnon in view of Harres, U.S. Patent No. 6,128,112 (hereinafter "Harres"); (4) rejected claims 13-15, 21-23, and 41-43 under 35 U.S.C. § 103(a) as being unpatentable over Arnon in view of Harres and Traa, U.S. Patent No. 6,222,660 (hereinafter "Traa") and Nakano, U.S. Patent No. 6,795,675 (hereinafter "Nakano"); (5) rejected claims 6 and 36 under 35 U.S.C. § 103(a) as being unpatentable over Arnon in view of Nakano; (6) rejected claim 37 under 35 U.S.C. § 103(a) as being unpatentable over Arnon in view of Traa and Nakano; (7) rejected claims 24, 26, and 28 under 35 U.S.C. § 103(a) as being unpatentable over Arnon in view of Hall et al., U.S. Patent No. 6,577,419 (hereinafter "Hall"); (8) rejected claim 27 under 35 U.S.C. § 103(a) as being unpatentable over Arnon and Hall and in further view of Harres; (9) rejected claims 29-31 under 35 U.S.C. § 103(a) as being unpatentable over Arnon and Hall and in further view of Harres and Traa and Nakano; (10) rejected claims 17, 25, and 34 under 35 U.S.C. § 103(a) as being unpatentable over Arnon and Hall and in further view of Tomooka et al., U.S. Patent No. 6,266,169 (hereinafter "Tomooka"). Applicant respectfully requests reconsideration and withdrawal of the rejections in view of the foregoing amendments and the following remarks. Claims 6, 22, 30, and 36 have been canceled.

### *Objection to the Drawings*

The Office objected to the drawings as not including reference sign(s) mentioned in the description: 123 in Figure 1, and 605 in Figure 8. Replacement formal drawings are filed concurrently herewith, in which Applicant has corrected the informality noted by the Examiner.

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Specifically, the component 605 described in the description but previously not shown in the drawings has been added to Figure 8.

In addition, Applicant amended the description to correct informalities. In particular, Applicants removed reference signs 114, 123, and 323 from the description, which are not shown in the drawings.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the objection to the drawings.

***Claim Rejection: 35 U.S.C. § 102(a)***

The Office rejected claims 1-4, 7, 16, 18, 20, 32-34 and 38 under 35 U.S.C. § 102(a) as being anticipated by Arnon. Applicant respectfully traverses.

Arnon generally pertains to a cellular communications network transmitting an optical carrier and detecting the modulated optical carrier in an avalanche photo-diode (APD). (Abstract). Arnon includes altering a gain of the APD responsive to a level of the optical carrier as to prevent saturation of the APD. (*Id.*)

**Claim 1**

Amended claim 1 is presented below:

An apparatus, comprising:

a receiver configured to receive an optical signal and to convert the optical signal to a corresponding electrical signal; and

a control circuit coupled to the receiver, the control circuit including a monitoring component configured to calculate a noise level of at least a portion of the electrical signal, and compare the noise level with a threshold value, and to adjust a gain of the receiver based on the noise level.

Arnon fails to disclose or suggest “the control circuit including a monitoring component configured to calculate a noise level of at least a portion of the electrical signal, and compare the noise level with a threshold value, and to adjust a gain of the receiver based on the noise level,” as recited by Applicants’ claim 1. The Office states, “Arnon does not expressly disclose to compare the calculated noise level with a threshold value.” (Office Action, page 14, paragraph 8, lines 9-10). Applicant agrees with the Office regarding this statement.

However, the Office points to Nakano as teaching “a feedback control circuit (Figures 1 and 2), which uses a reference voltage/threshold to control the gain of the APD.” (Office Action, page 14, paragraph 8, lines 13-14). Applicant respectfully traverses.

Nakano generally pertains to an alarm circuit. (Figure 2). More specifically, Nakano discloses monitoring an optical signal level provided in an optical receiver. (Abstract). The noise detection circuit multiplies the clock, utilizes the multiplied clock to identify surge noises included in the input signal, and outputs noise pulses. (*Id.*) The alarm circuit counts the noise pulses and outputs an alarm signal when the number of the pulses counted within a certain period reaches a preset value. (*Id.*)

Furthermore, Nakano teaches, “The output of the detector 56 is compared with a reference voltage 57 and amplified in a comparator/amplifier 58,” with regard to Figures 1 and 2 of Nakano. It follows that “the output of the detector 56” is a voltage, and thus a voltage is compared “with a reference voltage 57.” Therefore, Nakano does not teach “compare the calculated noise with a threshold” because Nakano teaches comparing voltages to one another. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claim 1.

#### Claims 2-4, 7

Claims 2-4 and 7 are dependent on base claim 1 and are at least allowable for their dependence upon an allowable base Claim 1. Therefore, Applicant respectfully requests

reconsideration and withdrawal of the rejection to claims 2-4 and 7.

**Claim 16**

Amended claim 16 is presented below:

An optical system, comprising:

    a transmitter configured to transmit an optical signal;  
    a receiver configured to receive the optical signal and to output an electrical signal; and  
    a monitoring component configured to monitor a noise level of at least a portion of the electrical signal and to reduce at least one of an amplification of the transmitter and a gain of the receiver when a ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold.

Arnon fails to disclose or suggest “to reduce at least one of an amplification of the transmitter and a gain of the receiver when a ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold,” as recited by Applicants’ claim 16. The Office states, “Arnon does not expressly disclose the gain is adjusted when a ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold.” (Office Action, page 12, lines 1-3). Applicant agrees with the Office regarding this statement.

However, the Office points to Harres and Traa as teaching this recitation. More specifically, the Office states, “Traa uses a bit error ratio for controlling the gain of the APD (Figure 1 and column 2 line 55 to column 3 line 11). (Office Action, page 12, lines 8-9). Applicant respectfully traverses.

Traa generally pertains to determining an optimum bias voltage for an avalanche photodiode. (Abstract). The bias voltage from the adaptive power supply is set at a specified offset below the breakdown voltage. (*Id.*)

The bit error *rate* is disclosed in Traa as follows:

The recovered data together with the recovered clock are input to an overhead bit error rate (BER) detector counter 32. The output from the BER counter 32 is input to the controller 18. The controller 18 controls the optical power level input to the APD 10 . . .”

(Traa, col. 2, lines 62-66). Traa fails to teach “reduce at least one of an amplification of the transmitter and a gain of the receiver [using] a ratio.” Instead, Traa teaches combining recovered data with the recovered clock. These numbers create a “rate,” (referencing the recovered clock) rather than a “ratio,” as recited by Applicant.

In addition, the Office states that Nakano teaches, “a predetermined threshold,” as recited by Applicant in claim 16. Applicant respectfully traverses. For the same reasons as discussed above regarding claim 1, Applicants respectfully submits that Nakano fails to teach or suggest “a predetermined threshold.” Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claim 16.

### Claims 17, 20

Claims 17 and 20 are dependent on base claim 16 and are at least allowable for their dependence upon an allowable base Claim 16. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 17 and 20.

### Claim 32

Claim 32 is similar to claim 1 and includes the recitation, “calculating a noise level of at least a portion of the electrical signal, and comparing the noise level with a threshold value; and adjusting at least one of an amplification of the optical signal and a gain of the receiver based on the noise level.” Applicant relies on the same reasoning as presented above with regard to claim 1, and therefore respectfully requests reconsideration and withdrawal of the rejection to claim 32.

### Claims 34, 38

Claims 34 and 38 are dependent on base claim 32 and are at least allowable for their dependence upon an allowable base Claim 32. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 34 and 38.

### *Claim Rejection: 35 U.S.C. § 103(a)*

### Claims 5, 8-15

Claims 5 and 8-15 are dependent on base claim 1 and are at least allowable for their dependence upon an allowable base Claim 1. Further reasons are set forth below to highlight other limitations included in these dependent claims which establish allowable subject matter.

Claim 13 is presented below:

The apparatus of Claim 1, wherein the monitoring component includes:  
a high energy calculation component configured to compute an average energy for the high-state A;  
a low energy calculation component configured to compute an average energy for the low-state -A; and  
a comparator configured to compare a ratio of the average energies for the high- and low-states A, -A with a predetermined threshold.

Traa fails to teach “comparator configured to compare a ratio of the average energies.” Instead, Traa teaches combining recovered data with the recovered clock. These numbers create a “rate,” (referencing the recovered clock) rather than a “ratio of the average energies,” as recited by Applicant.

In addition, the Office states that Nakano teaches, “a predetermined threshold,” as recited by Applicant in claim 13. Applicant respectfully traverses. For the same reasons as discussed above regarding claim 1, Applicants respectfully submits that Nakano fails to teach or suggest “a

predetermined threshold.” Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 5 and 8-15.

**Claims 17, 19, 21, 23**

Claims 17, 19, 21, and 23 are dependent on base claim 16 and are at least allowable for their dependence upon an allowable base Claim 16. Further reasons are set forth below to highlight other limitations included in these dependent claims which establish allowable subject matter. Claim 21 is similar to claim 13, as discussed above, and is believed allowable for the same reasoning presented above with regard to claim 13. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 17, 19, 21, and 23.

**Claim 24**

Independent claim 24 is similar to claim 16 and includes the recitation, “reduce at least one of an amplification of the transmitter and a gain of the receiver when a ratio of an average energy of a high-state A of the electrical signal and an average energy of a low-state A of the electrical signal is greater than a predetermined threshold.” Applicant relies on the same reasoning as presented above with regard to claim 16. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claim 24.

**Claim 25-31**

Claims 25-31 are dependent on base claim 24 and are at least allowable for their dependence upon an allowable base Claim 24. Further reasons are set forth below to highlight other limitations included in these dependent claims which establish allowable subject matter. Claim 29 is similar to claim 13, as discussed above, and is believed allowable for the same reasoning presented above with regard to claim 13. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 25-31.

Claims 35-37, 39-43

Claims 35-37 and 39-43 are dependent on base claim 32 and are at least allowable for their dependence upon an allowable base Claim 32. Further reasons are set forth below to highlight other limitations included in these dependent claims which establish allowable subject matter. Claim 41 is similar to claim 13, as discussed above, and is believed allowable for the same reasoning presented above with regard to claim 13. Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection to claims 35-37 and 39-43.

**CONCLUSION**

Accordingly, Applicants respectfully submit that pending claims 1-5, 7-21, 23-29, 31-35, and 37-43 are now in condition for allowance. If there are any remaining matters that may be handled by telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

Respectfully Submitted,

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By:   
Damon J. Kruger  
Lee & Hayes, PLLC  
Reg. No. 60,400  
(206) 315-7918

Enclosure(s): Replacement Formal Drawings

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